

TRANSBOUNDARY GAS GROUP

MEETING NOTES

March 16, 2000
Washington Department of Ecology
Spokane, Washington

1. Greetings and Introductions.

Bev Raymond and Chris Maynard welcomed everyone to the meeting, held on March 16 at the Washington Department of Ecology offices in Spokane, Washington. The facilitator for today's meeting was Mary Rupert. Raymond and Maynard covered a few housekeeping items, then reviewed today's agenda.

The following is a distillation (not a verbatim transcript) of items discussed at the meeting, together with actions taken on those items. Please note that all enclosures referenced are available upon request from NMFS' Kathy Ceballos at 503/230-5420 or via email at kathy.ceballos@noaa.gov.

II. Draft Framework Plan for Coordinating Activities of the Transboundary Gas Group.

Eric Stiles described the development of the draft plan, then distributed copies of this document (Enclosure C). He then went through a series of overheads, touching on the plan outline, goals and objectives, Phase 1 objectives, drawn from the last TGG meeting in Nelson, cooperative mechanisms, plan formulation, implementation and Phase 1 technical activities (biological investigations, structural characteristics, facility operations, monitoring information, computer modeling and framework plan integration), work group interactions, review and coordination, framework review cycles, short and long-term coordination, the framework flow diagram, funding and cost allocation, a description of TGG activities, a description of framework plan integration activities, a status summary of Phase 1 activities, and a summary of Phase 1 funding and costs. All of these overheads were taken directly from the draft plan; please refer to this document for details of Stiles' presentation.

The geographic scope here ends at the Flathead system, below Hungry Horse, said one participant - is that appropriate, given our goal of managing TDG on a systemwide basis? It is included in the FCRPS, so it will be included in our activities as well, Dave Zimmer replied. I look at our efforts here as more or less modular, added Mark Schneider - the FCRPS is pretty well encapsulated already, and there may be other areas that need more characterization work. We know what's going on at Hungry Horse, so it may make more sense to focus our efforts elsewhere, to bring all of the modules up to the same level, he said. Raymond observed that it would be appropriate to include both Libby and Hungry Horse in this plan, given their impacts

on flows downstream.

Jack Gakstatter thanked Zimmer and Stiles for all their hard work in the development of this plan. Schneider asked that any additional comments on the draft framework be submitted directly to Zimmer and Stiles by Friday, April 14. Stiles noted his email address: estiles@do.usbr.gov.

How do people feel about this framework - is it something you can support, with some minor modifications? Rupert asked. The majority of the TGG participants indicated their support in a show of hands. Those who didn't raise your hands - is it because you haven't had a chance to review it in detail? Rupert asked. Few participants raised their hands to indicate that this was the case.

Those who didn't raise your hands - do you have concerns about the plan? Asked Rupert. Gary Birch said he has a number of concerns, including the fact that Grand Coulee isn't included in the geographic scope. In addition, he said, much of the work you're proposing, we've already done - we already know where our hot spots are, for example. Basically, said Birch, I've marked red all over this, and I don't really see where the value lies, for B.C. Hydro. Stiles replied that part of the benefit of this document is that it formalizes what has gone before. That's true, said Birch, our head office may see some benefit to further participation.

It is very encouraging to hear that a lot of the work that would fit into the systemwide plan is already done, Schneider said - that's also true of the Lower Columbia and the Lower Snake. If other modules are done, that's wonderful - the whole objective of this group is to mesh those modules together, to develop a systemwide plan.

Raymond asked why Duncan and Hungry Horse weren't included - was it because they're not gas producers? Defining the geographic scope was one of the hardest tasks we faced, Zimmer replied - we included Grand Coulee on the map, though not in the plan, to lend some perspective. We eliminated the entire Spokane system, Duncan, the Pend Oreille system. We have had a lot of discussion about the geographic scope of this effort, said Schneider; if the group feels that other projects need to be added, to make this a truly systemwide effort, we can do so. Excluding any projects that influence operations downstream would probably be a mistake, added another participant. We were also concerned with not biting off more than we can chew in a two-year period, Zimmer added.

Other concerns? Schneider asked. I would like to leave here with a plan we can all support. If there are soft spots, let's fill them in.

One other concern, said Dave Wilson - what are the impacts of the Columbia River Treaty on Canadian operations? I can get somebody here to make a presentation on that, if you like, said BPA's Tom Foeller. Rupert wrote "Coordination of TGG plan with Columbia River Treaty" on the flip chart.

Birch raised a concern about the spill caps mandated by the Water Management Plan; it doesn't make any sense for an outside entity to tell us how much we can spill at that project, he

said. The spill caps in the U.S. are driven by the Endangered Species Act, and the Biological Assessments and Biological Opinions that are designed to avoid further jeopardy to threatened and endangered species, Schneider replied - that's where the caps come from. I'm not sure B.C. Hydro will be willing to accept outside control, in the form of a spill cap, Birch said. That's not our intent at all, Schneider said.

We also need to look at the 1909 Boundary Waters Treaty, if we're also going to include the Columbia River Treaty, said another participant - we'll call the International Joint Committee to see if they can send a representative to our next meeting, to discuss that.

Birch reiterated his concern that Grand Coulee isn't addressed in this draft of the plan, Zimmer replied that Grand Coulee is being addressed through Lower Columbia modeling - essentially, he said, it is included.

Additional concerns? Rupert asked. We need to know whether the Columbia River Treaty supercedes the Boundary Waters Treaty, Les Swain observed - there are areas where the two are in conflict, and we need to know which takes precedence. Isn't the real question how what we're trying to plan here may be affected by those treaties? Schneider asked - basically, we need to understand what they say and how they affect our efforts. If that's what you're after, there are also a number of smaller transboundary agreements - the Non-Treaty Storage Agreement, as well as several letter agreements, such as the recently-signed Libby Compensation Agreement, Birch observed. True, said Schneider, but is my description of why these agreements are important to this group an accurate one? My concern is mainly that all of these agreements limit B.C. Hydro's ability to make operational changes, Birch said.

Perhaps the exploration of this topic is an activity area that needs to be added to this plan, Schneider observed - obviously, he said, we need to understand how all of these agreements affect our efforts. Zimmer suggested that the Modeling or Framework Plan Integration subcommittees might be able to address this task.

You also wanted to see how dissolved gas abatement plans in the Lower River affect the TGG's efforts? Schneider asked. That would be very helpful, Birch replied - head office has hired a contractor to look at structural gas abatement alternatives at Keenleyside. That being the case, they really need to see the Corps' gas abatement plans - I think they would find them very helpful, Schneider said. Foeller observed that there were a number of papers presented on this subject at the Castlegar conference; in the interest of efficiency, it may make sense to dig those papers out.

So you think this is an activity that could be addressed through the Modeling subgroup? Rupert asked. They do need to understand how the existing treaties and agreements impact system operations, Stiles said. Joe Carroll said the Structural and Operational Improvements subgroups is another possibility. He said he will talk to Birch directly about providing copies of the relevant reports and documents.

After a few minutes of further discussion, it was agreed that both the modeling and the operations subgroups will deal with the issue of relevant treaties and agreements. Does that need

to be a separate project? Raymond asked. In my opinion, yes, Schneider replied. It was so agreed.

Swain suggested that the group identify what the relevant agreements and treaties are, and which of their provisions affect TGG activities - I'm not sure we really need to get into the legal details of which treaty supercedes the other, he said. That's the approach I had in mind, Schneider agreed - these issues are complex enough, without getting into the areas of legal disagreement. We're a technical group, not a legal group, and we need to make our decisions based on what is technically defensible, Raymond observed. However, if there are legal requirements that constrain our ability to implement certain actions, then we need to know about them, said Birch.

After a few minutes of additional discussion, Schneider suggested that it would probably be most appropriate for the Steering Committee to address the issue of relevant treaties and agreements; he offered to take this task on. Any disagreement? Rupert asked. None being heard, it was agreed to move on to the next agenda item.

Later in today's meeting, the group came back to this issue; Stiles said that, based on what he has heard, he is assuming that, once the comment period is over, he will go ahead and produce the Framework, with revisions as appropriate. In response to another question, Schneider agreed that he will probably need to make a presentation on this subject to the IT.

III. Corps of Engineers SYS TDG Model.

Mike Schneider of WES described his involvement with the development of the Corps' System Model for Total Dissolved Gas (SYS TDG), then went through a series of slides touching on a general introduction to the model's development, the Corps' Dissolved Gas Abatement Study (DGAS), a graph of TDG production at John Day, pre- and post- deflector installation, Ice Harbor Dam pre- and post- deflector gas production, a photograph of the Lower Monumental section model at WES, showing the flow deflector design, a photograph of the 1:40-scale model of The Dalles Dam at WES, a description of the Corps' Spill Optimization Program (the Gas Fasttrack Program), the philosophy behind the mathematical model, total dissolved gas exchange, gas solubility, dissolved gas concentrations in water, TDG exchange measurements, hydraulics and gas exchange, the role of spillway flow in TDG production and exchange, the role of powerhouse flow, the physics of TDG exchange, TDG exchange at dams in the Columbia River Basin, system properties and spill management, some examples of near-field TDG study data and model output, as well as descriptions of the physical characteristics, gas production potential of and gas abatement measures at Grand Coulee, Chief Joseph, Wells, Rocky Reach, Rock Island, Wanapum, Priest Rapids, Dworshak, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville Dams.

Schneider touched on model capabilities, model limitations, the model approach, the structure of the model "homepage," and some sample model outputs. He noted that the model is currently under review by Reclamation, the Corps and BPA. Copies of Schneider's presentation are available; please contact him directly at 601/634-3424.

Dana Schmidt asked whether the SYS TDG model includes Lake Roosevelt. No, Schneider replied, it starts at Grand Coulee. Why is that? Schmidt asked. Lake Roosevelt is a very complex system, which will probably require a three-dimensional model, Mike Schneider replied. Don't we need that linkage to the Canadian projects and the upper part of the Columbia system? Schmidt asked - otherwise, I question the utility of this tool. It's probably something that needs to be done, Schneider agreed; we probably need to factor in the tributary contributions as well. Schmidt noted that Larry Fiddler's existing mass balance model can develop reasonably accurate predictions of gas down to the International Border.

What this presentation points out to me is that we need a model developed between the border and Grand Coulee Dam, said Swain - there's just a little chunk left, and we'll have the whole system modeled. I'm hearing the same thing, said Mark Schneider.

The group spent a few minutes discussing the nuances of and differences between the Canadian and U.S. models; Birch noted that Fiddler's model only goes as far up the system as Keenleyside.

Ultimately, Mark Schneider asked whether the group agrees that Lake Roosevelt is the next area on which the TGG needs to focus its modeling attention. The Pend Oreille system would also be useful, Raymond said. Mike Schneider noted that another thing that is needed is detailed individual project descriptions. Another participant suggested that detailed characterizations of Lake Roosevelt and the Pend Oreille and the Spokane River system are also needed. Other suggestions: investigate the compatibility of the three models (Lower Columbia, Upper Columbia, Lake Roosevelt), power generation component and, possible, flood control.

Rupert noted the following action items on the flip chart:

Action Items

1. Individual project descriptions - site characteristics, operational properties, water quality response
2. Characterize Lake Roosevelt
3. Characterize Pend Oreille River
4. Characterize Spokane River
5. Investigate compatibility of the three models - geographic overlap to check model output?
6. Power generation component?

Mark Schneider suggested that a TGG subgroup be formed to flesh out this task list; no disagreements were raised to this suggestion. Who will help me do it? Schneider asked. Various TGG participants, including Mike Schneider, Dana Schmidt, Dave Zimmer and Scott Bettin volunteered (or were volunteered) to serve on this subgroup. Mark Schneider said he will set up a conference call some time between now and April 14 - probably during the first week in April - to discuss this task.

If we're going to attack the Lake Roosevelt problem, Schneider added, I would suggest that we all start to think about a source of funding for this modeling effort. Joe Carroll noted that

there is a meeting coming up to discuss Lake Roosevelt-related technical issues. Keith Underwood said the Lake Roosevelt Forum is sponsoring a two-day workshop scheduled for May 23-24 to discuss technical issues related to Lake Roosevelt, and to encourage public interest in these issues. In addition, he said, we are developing a subbasin plan for submission to the Council; this will be accompanied by an outpouring of technical data that may be useful to the characterization process you've described today, Underwood said.

Mark Schneider added that, rather than wait until the next TGG meeting six months hence, he would prefer to develop a summary of the discussion at the conference call and distribute it electronically to the TGG membership. I'll develop a report, he said; perhaps, once that report is sent out, we can all start thinking about how

IV. Dissolved Gas Monitoring Plans for 2000.

Andrea Ryan said that, at the end of March, a CRIEMP meeting is scheduled, at which everyone's monitoring plans will be presented. We're also waiting for the monitoring results for next year, Ryan said. She put up a list of the Canadian monitoring plans she does know about:

- Continuation of automated TDG monitoring station on Columbia River at Waneta (Environment Canada and BC Environment)
- Objectives monitoring for TDG in spring, fall and January (BC Environment)
- Spot TDG measurements to fill in gaps - ascertain why gas levels are where they are, under various operational conditions. Spot measurements at Aberfeldie, Elko, Spillimacheen, the Duncan system, Keenleyside and Kootenay Canal (B.C. Hydro)
- May implement monitoring as recommended in summer 1999 monitoring study report and via CRIEMP (Cominco)
- Monitor at Brilliant to verify Larry Fiddler's model (Columbia Power Co.)
- None planned at this time (West Kootenay Power)
- Meeting at end of March to further discuss monitoring plans. Once report on 1999 monitoring program is complete, TGP sub-group will review, and likely get together in early spring for discussion of data gathering needs, in anticipation of future requirements of the Water Use Planning process (CRIEMP).

Next, Dick Cassidy described the Corps' planned 2000 monitoring activities. The Corps has a number of activities underway, Cassidy said. In terms of Lower Columbia activities through the Corps' Portland District, monitoring began in early February below Bonneville Dam, in anticipation of the Spring Creek Hatchery release. Those fish were released last week, Cassidy said; monitoring has been ongoing since then. The Corps is also attempting to protect the chinook and chum salmon redds below Bonneville, so it is important to keep TDG levels to a minimum. Those have been the main focuses of our real-time monitoring activities this spring, Cassidy explained.

With respect to Walla Walla District activities, this year, for the first time, the district is contracting out its monitoring activities; it has also contracted with USGS to do its data transmission, this year, via satellite telemetry, Cassidy said.

Next, Robert McDonald of Chelan PUD described planned monitoring activities at Rocky Reach (forebay and tailwater monitoring instruments from April through August), Rock Island (prototype flow detector installation, near-field TDG instrumentation).

At wells, said Rick Klinge, we have revised our data transmission system to correct some glitches that occurred last year. We will monitor both forebay and tailwater TDG levels from April 1-September 15. We have also developed a monthly calibration process.

At Grant and Priest Rapids, we'll be operating forebay and tailwater monitors year-round, Klinge said. We will be measuring TDG, as well as dissolved gas oxygen, temperature and turbidity. We'll also be improving the reporting of our monitoring data, to make it available in real-time, he said - we hope to have that in place by April 1. In addition to the fixed-site monitoring, in the past several years, we have been doing some transect monitoring from Rock Island tailrace down to Priest Rapids, Klinge said; we will be doing that again this year, together with limnological studies in support of the Priest Rapids relicensing process. In addition, flow deflectors at Priest Rapids were just completed last week; Mike Schneider and Joe Carroll will also be evaluating the performance of those deflectors this spring.

Joe Carroll put up an overhead showing the distribution of the Corps' monitoring instruments in the Snake and Columbia Rivers; he spent a few minutes describing the location of many of these instruments with respect to various projects in the system. The program for 2000 is calibration every two weeks, with hourly data transmission, he said. There will be some detailed studies at Rock Island to study the performance of the prototype deflector; we will also be doing a near-field study of the new deflectors at Wanapum.

V. Proposal for Model Application.

Mike Schneider said he had planned to hand out a strawman proposal as to how the SYS TDG model might be utilized; however, he said, the strawman I developed is not at all compatible with where we've arrived. Instead, he referred the group's attention to the list of action items Rupert wrote on the flip chart.

VI. Sensitive Species Identification and Discussion.

A. Pend Oreille River. Keith Binkley of Seattle City Light distributed Enclosures D and E, both titled "Sensitive Species Identification and Discussion, Pend Oreille River." He spent about five minutes going through these documents, which covered bull trout, West Slope cutthroat trout and white sturgeon. (Please see Enclosures D and E for details of Binkley's presentation.

B. Lake Roosevelt. Keith Underwood said the Spokane Tribe has documented bull trout in Lake Roosevelt, but has not yet identified the tributaries in which they're spawning. We also have a few West Slope cutthroat trout sightings, he said; Paiute sculpin, a state species of concern, are also present, as are white sturgeon. Suckers and carp aren't species of concern, but they do get hit pretty hard when TDG levels are high. The only other species of concern of which I'm aware is the spade-foot toad, Underwood said, but I have no idea how or if they are affected

by TDG.

Raymond added that CRIEMP is considering the development of a project that would overlay species of concern with known TDG hotspots for the Canadian portion of the basin.

VII. Brilliant Enhancement Program.

Dana Schmidt led this presentation, working from a series of overheads. The first was a map, showing the location of Brilliant Dam in relation to other Canadian projects; current powerhouse capacity is 18 Kcfs; they are embarking on a 2-year overhaul and turbine upgrade project that will increase capacity to 21.6 Kcfs. Typical flow through the project is about 43 Kcfs, so there is a lot of spill, Schmidt explained.

We are applying to expand powerhouse capacity by 100 aMW, Schmidt explained; he put up an overhead showing a schematic of the expanded facility. His next overhead was titled “Post-Expansion Operations”

- Existing operating criteria to remain
- Comply with regulatory (IJC) and treaty requirements
- Minimize Brilliant spill
- Direct spill to high-value periods
- Cap upstream flows at 967 cubic meters per second
- May increase the shift of light-load hours to high-load hours - increased load shaping at both plant operations during October and November
- Lower minimum flow from 18 Kcfs to 14 Kcfs

Next,

-